



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

II. Solution by J. C. NAGLE, M. A., M. C. E., Professor of Civil Engineering in Agricultural and Mechanical College of Texas, College Station, Texas.

The sum of the weights of the rods will be a minimum when their areas are a minimum, which will occur when the stresses are made a minimum. By resolution of forces we have for the sum of the three stresses in ab , bc and ac , calling the equal angles θ : sum of stresses equals

$$L\left(\frac{1}{\sin\theta} - \frac{1}{2}\frac{\cos\theta}{\sin\theta}\right).$$

Equating the first derivative to zero, we get, after reduction, $\cos\theta = \frac{1}{2}$. Therefore $\theta = 60^\circ$ and the triangle is equilateral.

65. Proposed by G. B. M. ZERR, A. M., Ph. D., President and Professor of Mathematics, The Russell College, Lebanon, Va.

The distance, parallel to the axis, from the mid-point of a chord to the arc of a parabola, is constant. Show that the center of gravity of all segments formed by the chord is an equal parabola.

I. Solution by the PROPOSER.

Let A be the vertex of the segment; (h, k) its coördinates; $5b$ the constant length from A to the center of the chord; θ the inclination of the chord to the axis; $y^2 = 4ax$, the equation to the parabola; (m, n) the coördinates of the center of gravity of the segment.

Then $h = m = a \cot^2 \theta$, $n = k + 3b = 2a \cot \theta + 3b$.

$\therefore \cot \theta = [(n - 3b)/2a] = \sqrt{m/a}$.

$\therefore m/a = [(n - 3b)/2a]^2$. Let $n = p + 3b$.

$\therefore p^2 = 4am$, an equal parabola.

II. Solution by GEORGE LILLEY, Ph. D., Professor of Mathematics, University of Oregon, Eugene, Ore.

Take the diameter through the mid-point and the tangent at its extremity for axes.

Then $y^2 = 4cx$, where θ is the angle between the axes and $c = a/\sin^2 \theta$.

Since the diameter bisects the area of the segment,

$$x = \frac{\int_0^k 2x \sqrt{cx} dx}{\int_0^k 2\sqrt{cx} dx} = \frac{2}{3}k; y = 0,$$

where k is the distance from the arc to the mid-point.

But $x = a \cot^2 \theta + \frac{2}{3}k$; $y = 2a \cot \theta$, referred to the vertex and rectangular axes.

$\therefore (y)^2 = 4a(x - \frac{2}{3}k)$ or $y^2 = 4a(x - \frac{2}{3}k)$, which is the equation of an equal parabola with its vertex on the axis at a distance $\frac{2}{3}k$ from the given one.

Also solved by J. SCHEFFER.